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ABSTRACT

Computer use in Michigan schools has evolved in three stages over the past decade. In the first, computers were new and few, and professional development was typically self-initiated. The Michigan Association of Computer Users in Learning (MACUL) was formed at this time to provide resources to local districts which they were unable to provide individually and increase communication among computer users. During the second stage, more computers were brought into the schools and concerns about hardware selection and software availability increased. The WE CAN (Wholesome, Effective Computer Applications Network) was established in 1981 to facilitate the purchase of hardware and software at discount prices by local schools. Both MACUL and WE CAN initiated annual conferences which are a continuing part of the statewide program. The current stage began in 1984 when computers were found in most schools in Michigan, and a statewide plan for the integration of computers in education was implemented which provided funding for five training/software centers and the development of a comprehensive training package for teachers' professional development. The Microcomputer Network Committee was also established to coordinate computer projects. The major concerns currently are professional development to provide teachers with the skills they need to use computers effectively, and the integration of computers into the curriculum rather than teaching computer literacy as a separate course. The need for continuing increased funding for professional development, updating the software collection, and update/maintenance of hardware is noted. A diagram of the Michigan model for integrating computers in education is included. (RP)

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INTEGRATING COMPUTERS INTO MICHIGAN EDUCATION

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INTEGRATING COMPUTERS INTO MICHIGAN EDUCATION

Computers first entered education in the 1960's. There were a few major projects like the Plato project at University of Illinois where curriculum materials were developed and research into the teaching/learning process was conducted. Several large school districts; for example, Philadelphia; established instructional computing departments to develop curriculum materials and experiment with their implementation into the classroom. Those were the days of room-sized mainframe computers, programming in Fortran, keypunching, and primitive telecommunications to transmit the instructional programs to classrooms. In spite of the expense and the frustration of low tech, education was moving toward the age of technology. The visionaries saw a future in which the computer could help educators better meet the needs of individual students.

That vision had the potential for realization when the micro-chip was developed, permitting the down-sizing of hardware with an accompanying increase in memory. The microcomputer was developed. New languages and lower costs facilitated easier access. But education was not ready to step into the age of technology. The schoolhouse doors did not fly open to welcome this latest "teaching machine".

Rather, it was individual teachers and parents who saw the revolution occuring in the workplace and the need for

students to be "computer literate". They perceived that the school could, and should, play a role in preparing students for the information age. Thus, they committed themselves to the acquisition of this technology and the education of students in its use. Through fundraisers, teachers and/or PTAs earned money for the first computers. This nudge toward technology became a push as more and more computers appeared in schools. Then, with the recommendation that "computer literacy" be a prerequisite to high school graduation, the educational reports of the past few years shoved computers into education.

The result is that today there are a million computers in our schools being used by 15 million students and half-a-million teachers (Becker, 1985). Computers are becoming a line item in school budgets. They can no longer be ignored. They are legitimate denizens of the schools.

With an older teaching force trained before the advent of microcomputers, professional development becomes a vital issue if we are to meet this latest challenge. How can teachers be trained in the use of microcomputers? What is the role of the local district, the intermediate units, the institutions of higher education , and the State Department of Education in this training effort? This paper will describe how one state (Michigan) has responded in an evolutionary manner to these questions throughout the last decade.

Chart 1

Three Stages of Development for
Computer Use in Michigan Education

Micros New & Few

Prof. Dev. Self-
Initiated

MACUL formed (1975)
newsletter
conference

More computers

Concern about hardware
and software
acquisition

Concern for prof. dev.
at ISD & local levels

WE CAN formed (1981)
coord. purchasing
conference

Million computers in
schools

State plan for prof. dev.
(1984-86)
training modules
training /software
centers
train trainers
eval. software
software inventory
preview center

Stage 1

Stage 2

Stage 3

Stage I

The earliest stage began with a person excited enough about the potential of microcomputers to commit him/herself to finding the money to purchase a computer for the school. This person may have been a teacher who started a "computer club", which earned the funds, or who wrote proposals for their acquisition. It may have been a parent who convinced the PTA that a computer was important to childrens' education. Irrespective of who provided the impetus for computer purchases, the first computers usually were not purchased through the regular school budget. Thus, they might be considered "gifts" to the school.

When these "gift computers" were purchased, the schools were faced with the questions of: What do we do with it?, How does it operate?, What can it do?, How can it be used to further education? In many cases these computers were unwelcome. But, each staff usually had one or more brave souls who decided to master the machine. These innovators were frequently self-taught. Often they pursued training opportunities offered by institutions of higher education and computer companies. Professional development in the area of computers was not offered by the local school districts. However, the large Intermediate School Districts (ISDs) in the Detroit metropolitan area attempted to assist these pioneers.

In 1975 a group of individuals in these ISDs formed the Michigan Association of Computer Users in Learning (MACUL). The goal of this organization was to provide resources to local districts which they were unable to provide individually. In addition, MACUL offered the early adopters the opportunity to increase their knowledge about computers and share experiences and learnings. A newsletter and an annual conference were initiated as means to increase communication. Both of these vehicles have met a need within the state. Membership has skyrocketed during the decade. No longer is it composed of only the innovators, but is a diverse group comprised of those who were early adopters to the more recent late adopters. Today the conference offers more than 200 speakers to meet the varied needs of the organization's members and draws over 2500 registrants a year. It has established a reputation as one of the major conferences in the country on educational computing.

Stage II

As computers became more common in schools, they became more accepted. Teachers and administrators began to see that they had potential. However, the price wasn't right for the slim educational budgets. There was concern about acquiring hardware and the availability of software. These problems were recognized by the Regional Educational Media Centers (REMCs), which operate at the ISD, or multi-ISD, level to

provide media materials to local public and private schools. A nucleus of REMC Directors suggested that a consortium be established to facilitate the purchase of hardware and software at discount prices by educational institutions. They called this group, formed in 1981, WE CAN (Wholesome, Effective Computer Applications Network). Purchase agreements were negotiated with several computer companies, Minnesota Educational Computing Consortium (MECC), and other software publishers. This network quickly spread to include all but two of the REMCs in the state, those two being the large metropolitan centers with educational technology departments able to meet the needs of their local schools. Today WE CAN continues to distribute information to local schools about hardware and software purchase opportunities and coordinates purchases -- an important role in the integration of computers into Michigan education.

Perceiving that just getting materials into the schools was not enough, WE CAN offered a training conference in 1982. The Fall Microcomputer Conference has become a tradition in just four years. This conference, generally held in the central part of the state, draws a large audience from the northern and central regions, while the MACUL conference tends to attract more attendees from the southern part of the state where is is held.

In 1983-84 funding was obtained for the training of trainers. Through a series of three day-long sessions, the

140+ identified trainers were trained to provide computer awareness to teachers in their local districts. The names of these trainers were made available to local districts and their involvement is now on an individual basis.

Stage III

By 1984 computers were found in most schools in Michigan, although in small numbers outside the metropolitan Detroit area. Michigan is currently at the stage of having the early majority of adopters involved. They are not concerned with learning to program the computer or how it works. They are aware that software is more abundant and they want to know what is available. Furthermore, they want to know how they can use the computer to more effectively teach students. They do not see "computer literacy" as another subject to be taught, but see it as the outgrowth of integrating the computer into the on-going curriculum of the school. And, they are asking for professional development opportunities that will help them meet these goals.

Michigan Department of Education chose this time to implement a statewide plan for computers in education. Five training/software centers (Technology in Michigan Education, TIME, projects) were funded in 1984 to provide the following services regionally.

- identify, collect, critique, and catalog educational software,

- disseminate information regarding the network and provide access to the materials collected by the network,
- train teachers, administrators, and other education staff in the use of microcomputers for both instructional and administrative purposes,
- provide consultation and technical assistance to local school personnel for research and development of computer-based educational materials,
- coordinate, when feasible, the purchase of hardware and software, and
- develop regional planning models.

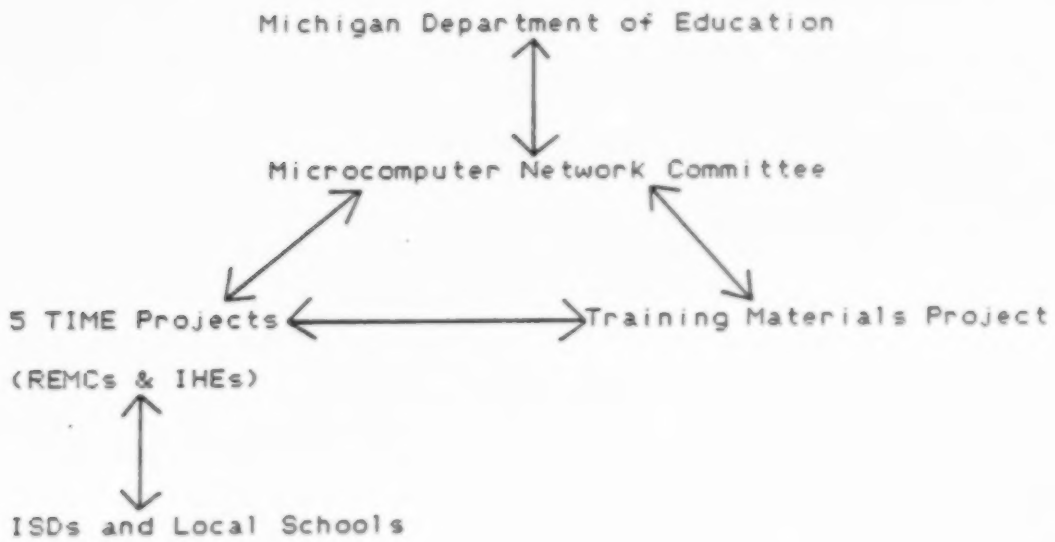
In addition, a project was funded to collect available training materials and produce a comprehensive training package to be used throughout the state for teachers' professional development.

To coordinate the work of the projects and facilitate communication between projects and the Michigan Department of Education, the Microcomputer Network Committee was established. This committee is composed of representatives of each of the projects and the Department of Education. Diagram 1 shows the structure of the current Michigan model.

Diagram 1

Michigan Model for Integrating

Computers into Education



At present the TIME projects are funded from "discretionary funds". However, other monies are becoming more available for professional development in the area of computers. For example, Chapter II monies can be used to adopt National Diffusion Network projects; some of these relate to computers. The Education for Economic Security Act provides funds that can be used for professional development in the areas of mathematics, science, computers, and foreign language. And, a new segment of funding is available, Section 98, for professional development to improve instruction -- but, only to supplement other monies.

While professional development money is becoming more available, there is the attendant concern about the continuation of the project "after the grant". How can the inroads made be institutionalized? Can means be established for professional development to become an integral part of the local or ISD budget? One way this concern is being expressed is with the stipulation that there must be a three-year plan for Section 98 funds and a local match for the funding -- 20% in Year 1, 40% in Year 2, and 100% in Year 3. Also, this money must be used for the direct provision of services; administrative costs can not be included in the grant.

A second concern is that the IHEs are not meeting the needs of teachers for professional development. There is consideration of continuing education units for on-going

certification in addition to the traditional graduate credit. The Office of Professional Development, through the Section 98 funds, is strongly encouraging the provision of credit (CEUs and/or graduate credit) through the IHEs for professional development.

All of these considerations impact those involved in professional development in Michigan. TIME-NORTH is used as an example of how one training/software center is responding to these factors as it attempts to meet teacher's needs for professional development in the area of computers.

TIME-NORTH

TIME-NORTH, serving the upper half of Michigan's lower peninsula is one of the five training/software centers. Growing out of the original nucleus of WE CAN members, TIME-NORTH has set the pace for training on the integration of microcomputers into the regular curriculum of the school. This has been accomplished using a democratic/cooperative implementation model. Two decision-making bodies are involved: an Advisory Committee, which meets quarterly, and a Management Committee meeting monthly. On each committee there are representatives of the REMCs/ISDs and the institutions of high education (IHEs) in the region. The Advisory Committee also includes teachers, administrators, and business/industry representatives. All of these role

groups are actively involved in planning the work of the project.

It is because of the active involvement of the IHEs in TIME-NORTH, that they recognize the validity of the project's training efforts and support its training for graduate credit. This serves as an incentive for teachers to participate in professional development because such credit is still the only acceptable credit in Michigan for continuing certification and salary advancement. Currently, the project is proposing a variable-credit course for which teachers can register. They can take any of a number of workshops with a specified distribution among general topics, applications, discipline specific integration, and languages. Upon meeting pre-defined objectives and payment of the appropriate fees graduate credit will be granted.

Another way TIME-NORTH is attempting to better meet the needs of teachers is by supplementing the TIME grant monies with other grants to meet specific needs. For example, a Chapter II, Program Adoption Grant was obtained for the adoption of the Cupertino Concept: Computer Literacy and Beyond, which emphasizes the integration of computers into the on-going curriculum. This program has been nationally validated and is disseminated through the National Diffusion Network. Ten demonstration sites are being established throughout the region. Initial training of a team (administrator, district computer coordinator, and several

demonstration site teachers) from each participating district is being provided by Cupertino as well as a follow-up training session. Other professional development is being provided through TIME. And, support is being provided to teachers by the TIME staff.

A serious problem we face in Michigan is limited money and time for professional development. The TIME funding is inadequate to provide for the release of teachers from their teaching duties to participate in professional development. Yet, the Department of Education's Office of Professional Development sees professional development during the school day as important. TIME is attempting to respond to this need by applying for supplemental funding through Section 98. This money, which requires a 20% match, would increase TIME's effectiveness by increasing our audience. The money in the basic TIME budget for professional development and administration will be used as matching funds.

The TIME projects may be terminated in 1986. Obtaining Section 98 funds now will continue the training of teachers for the integration of computers while at the same time requiring a more substantial monetary commitment from the ISDs/REMCs each year with the expectation that the program will be institutionalized.

Implications

For the effective use of computers in schools teachers must be trained in the use of this new technology -- how it can help them manage instruction, simulate events, and do a better job of teaching the on-going curriculum. It is only when teachers attain these skills that they can be considered computer literate. This implies that the integration of computers into the curriculum needs to be our primary focus. "Computer literacy" for both teachers and students is the ability to apply it within the everyday life of the school. It is not a separate subject area.

If the computer is to be a means for more effectively delivering the on-going educational program then we must be aware that teachers also need to develop some new classroom management skills. They need to think about the individual student, not whole-group instruction. This must be accompanied with new planning and management techniques - how to teach with one (or just a few) computer(s). This new focus on the individual child will bring us closer to the vision of those early experimenters with computers, but implies that the structure of our schools, as we know them, may change.

To accomplish this goal of integrating the computer into the curriculum requires that teachers have support in their work. They need to have a support person(s) readily at hand to coach them when they request it. Might this be a role

for our computer coordinators? Or is another person needed? Whoever assumes this role we must recognize that the job can't be done on a volunteer basis or with just a period or two released time each week.

But, that isn't enough. Teachers need help with software selection and identifying available resources.

All these needs indicate that increased funding is required on a continuing basis. Professional development, updating of the sofstware collection, and update/maintenance of hardware must be on-going. To fully integrate computers into education the commitment of the local districts, ISDs, and Department of Education is needed, backed with adequate funds. When this occurs there will be the potential for major changes in Michigan education.

References

Becker, H. Speech given at "Computers and Children: What Lies Ahead" Conference; Ann Arbor, MI, October, 1985.